FMC

PACKING LUBRICATION AND VENT SYSTEM
FMC VAPORLESS STUFFING BOXES

FMC plunger pumps can be equipped with a packing lubrication and vent system attached to stuffing boxes as shown on the attached diagram. This system is often used when pumping light hydrocarbons to reduce emissions from leaking packing.

The packing arrangement consists of a primary packing set and a secondary seal or packing set. The primary packing allows a small amount (2 to 10 drops from each box per minute) of product leakage under normal operation. This leakage is vented through a common manifold to flare or a waste tank.

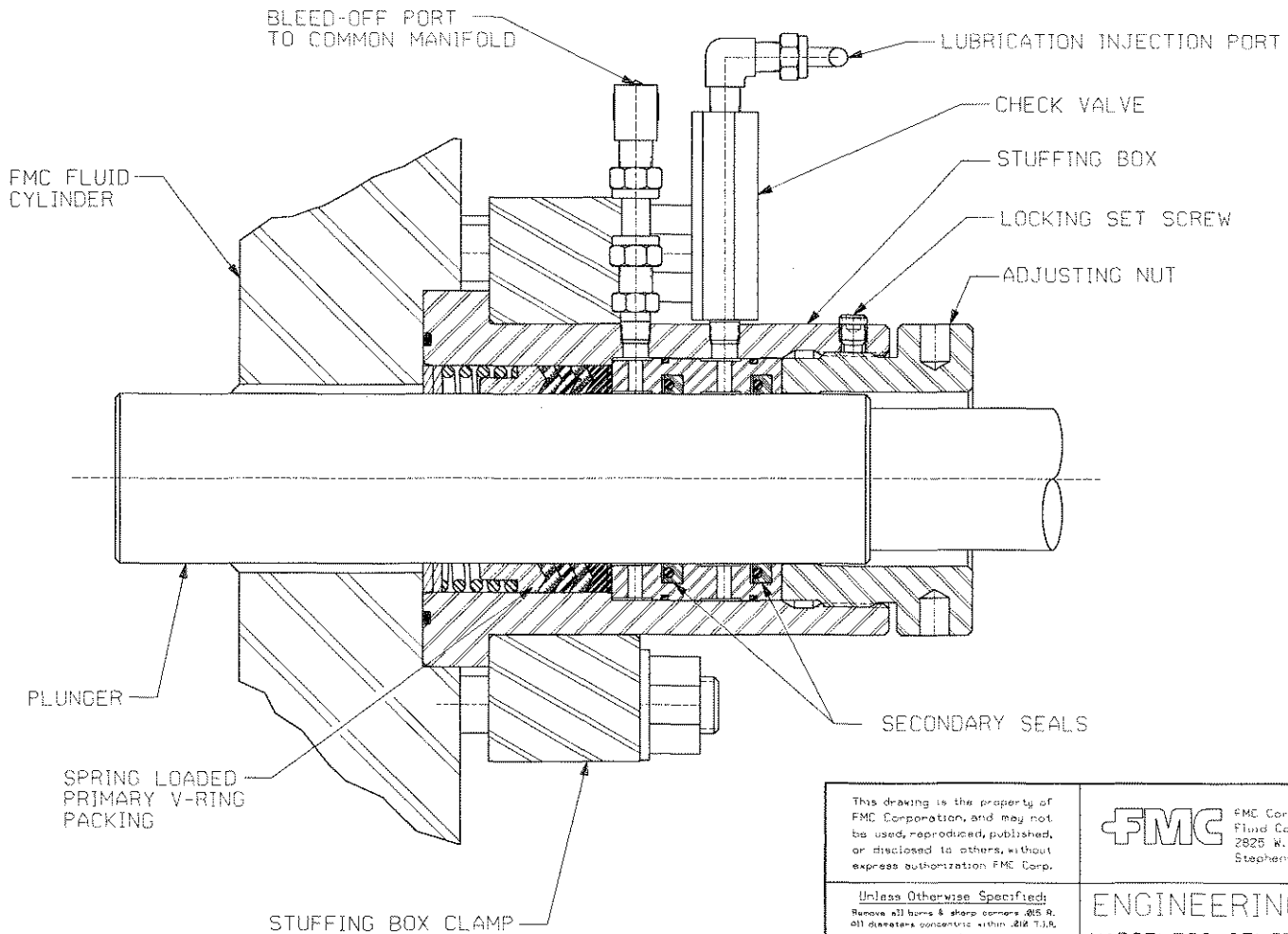
If the leakage through the packing increases, the pressure loss through the needle valve and the corresponding pressures on the pressure switch and gauge increases. The pressure switch can be preset at a trip pressure that will result in an alarm or equipment shutdown. Leakage that results in these high-pressure losses usually indicates a packing failure. The secondary seal should limit almost all leakage to the atmosphere upon primary packing failure. This will allow for a scheduled maintenance rather than an emergency maintenance.

Upon startup the needle valve is closed until the needle just lifts off the "zero" position. This will allow the pressure switch and gauge to be responsive to increased leakage. A snubber or valve should be located before the gauge to minimize gauge damage due to pressure fluctuation and vibration.

Packing lubricant is required on all vaporless stuffing boxes. The lubricant is piped from a mechanical driven packing lubricator to the stuffing box at the secondary packing location. The lubricant is typically rock drill (steam cylinder) oil. The rock drill oil lubricates the elastomers and keeps deposition of foreign matter onto the plunger surface to a minimum.

The lubricant is moved both forward into the primary packing chamber and back past the adjusting nut and into the cradle area of the pump power end as the plunger strokes forward and back. The lubricant serves as a barrier fluid to the light hydrocarbon resulting in a near vaporless amount of leakage of product to the atmosphere. Piping will be required from the cradle drain to disposal. Note the M06 pumps have an open cradle, so a drip pan will be required to collect any leakage and route to a drain for disposal.

SK TM Ø1



FMC Corporation
Fluid Control Division
2825 W. Washington Box 1377
Stephenville, Texas 76401

Unless Otherwise Specified:
Remove all burrs & sharp corners .015 R.
All diameters concentric within .010 T.I.R.

Angles	±1/2°
.X	± .1
.Xx	±.Ø15
.XXX	±.Ø05
Finish 125 RMS	

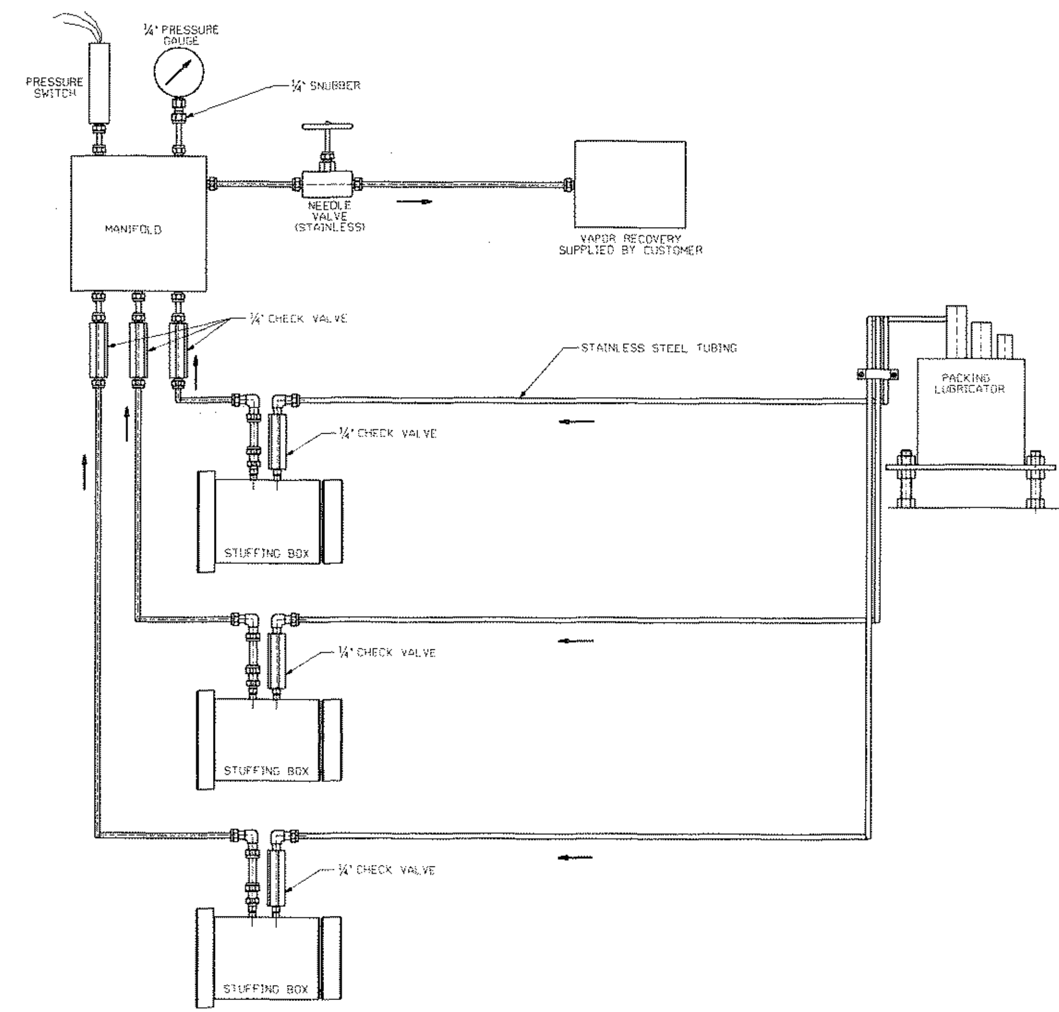
All dimensions are in inches

ENGINEERING OUTLINE

VAPORLESS STUFFING BOX, ARRANGEMENT

REV	WAS	ECN	BY	DATE
A			TM	

RELEASED FOR PRODUCTION					
ECN	DATE	DRAWN	TM	11-19-98	SCALE: NONE
		CKD.			SIZE: B
		APPD.			DRAWING NO. SK TM Ø1



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Fluid Control Division

FLOW DIAGRAM

PACKING LUBRICATION AND VENT SYSTEM
VAPORLESS STUFFING BOX

RELEASED FOR PRODUCTION	DRAWN	TM	11-19-98	SCALE: NONE
ECN / DATE	CKD.			SIZE D
	APPD.			DRAWING NO. SK TM 02

REV	WAS	ECN	BY	DATE
Δ			TM	

SK TM 02